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TECHNICAL COMMUNICATION: NOTES TOWARD DEFINING A DISCIPLINE

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Perhaps this is simply an era when simplistic solutions to complex problems becomes a dominant theme for our age. It has somehow become fashionable to make very general statements and present them as universal truths. In the field of technical communication, for instance, one can survey the definitions posited in virtually any major text and discover that each one violates every major rule of definitions. The most popular method for defining the field is to state that technical writing is any writing that supports technology or technological activities. One then is left with a hollow feeling that he/she needs a nice yardstick for measuring what "technology" is. One is also left with a nagging, perhaps niggling, doubt that there is something subversive, perhaps even anti-humanistic about "supporting technology." It seems to me that we have to stretch this definition in some ways and collapse it in others; I don't, however, want to put this effort on a Procrustean rack. I want to suggest, first, some ways in which the field can be defined in a tightly structured empirical way and, second, to posit the implications of technical communication for a humanistic education in a technological age.

Unlike any other field, with the possible exception of science writing, technical writing, strongly implies that there is a clear emphasis on the product. In this sense it is at one with the field it claims to support. We find that even in the works of such people as Herbert Simon, the key feature of technological activities is the production of artifacts. It is this informing principle of technology that, I believe, tends to obscure the definition of technical writing in all of its possible permutations. Editors in the corporate environment express their concern only about the lack of documentation for a new product; that concern is not tempered with a concomitant regard for the veracity or usefulness of the document (nor for that matter, is there any interest in the ethical dimensions of the document).

This drive for product has another deleterious effect on technical writing: it creates a focus on words as a variety of transparent symbols that work best when they don't get in the way of the user. James Kinneavy, for instance, proposes this view of referential language in support of technological activities. What is clearly (no pun intended) wrong with this perspective is that words become less than words. Their task is to slip through the reading process with the least amount of effort and to elicit as little attention as possible. Unfortunately, we know from such theorists as Michael Polanyi, Gerald Holton, Thomas Kuhn, and Larry Laudan that language and technological thought (activity) simply don't work that way. There is no such animal in the entire world as an unambiguous text (or illustration for that matter). All reading, as Iser, Rosenblatt, Bleich,

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and others have argued, is an interactive process informed by the readers interests and background. This counter argument is interesting for a variety of reasons. First, it refutes the reasoning that says that language is transparent. Readers do have to participate in the text; referential texts are less open to interpretation and ambiguity than a piece of fiction, but they are still open. Second, this observation supports the more realistic view of the communication process and communication models in technical writing. Until we accept the fact that there is a reader who has expectations, needs, and failings (perceptual as well as social), the supposed objective nature of technical texts will remain useless and mythical. Writing and its uses in the real world simply do not support this naive view of writing as artifact, as product.

Another view of this same perspective is the position that sees writing as a pure object that exists in some kind of vacuum. The reader is simply not part of the schema of communication. Of course, some of this thinking is informed by the general perception that much which is technical is, in fact, visual in nature. Admittedly that is a valid point when we consider that virtually every study of technical and scientific material indicates that such texts are approximately thirty percent visual. Many companies, particularly international corporations, have even increased that percentage in an attempt to deal with transcultural problems. However, it is hard to escape the needs of a literate and demanding readership.

This situation is also supported, consciously or unconsciously, by the academic and professional societies. The International Technical Communication Conference (ITCC), for example, has offered only a handful of papers on reading, as distinct from readability in over a quarter century of meetings. Most of their offerings have, indeed, focused on sophisticated mechanical crutches that analyze written material in a quantitative fashion. As Merrill Whitburn and S. M. Halloran have pointed out, none of this thinking has done anything constructive to assist ours or the writers' understanding of audience. Instead it has pointed out, and perhaps exacerbated, the tensions that exist in defining who technical writers are and what they are about. ITCC is not the only culprit. The International Reading Association has not even given lip service to audience. In fact, only three papers on college or adult audience reading perception were offered at their 1979 convention. One of those papers was by Anne Eisenberg who has indeed moved into untested territory by exploring the demands of reading scientific and technical material.

What does this lack of interest in the reader say for defining the field of technical communication, and what are the consequences of this information? Succinctly, ignoring the reader violates everything we know about communication and communication models. Even if we use the most common model--Shannon/Weaver--we have a writer, a medium, and a receiver. If we are not concerned with who gets the message we compose and send, then why are we sending it? What are we doing?

One can, of course, try to make the case that technical writing textbooks, indeed, keep audience in mind. I haven't been able to convince myself that this is true. For instance, Mathes and Stevenson go to great

lengths to explore audience levels throughout an organization. What they prove is that you can be aware of those levels, not how to write to them. Walker Gibson, it seems to me, does a better job in both Persona and Tough, Sweet, and Stuffy. Admittedly, both or perhaps all of these approaches are still too subjective. Let me take a few moments to explore an empirical methodology that reaches into communicology, contemporary discourse theory, and even ethics, which I feel, tentative though it is at this point, offers a way for defining audiences, purposes, and by extension, the domain of technical communication with a great deal of precision.

My suggested model combines the work of Charles Osgood, Torgerson and the Princeton Group, Shepard and the Bell Laboratories Research Group, Woefel and the GODI Group; Richard Lloyd-Jones' efforts in primary trait characteristics for evaluating written texts; and finally, William Perry and Lawrence Kohlberg's work on ethical dimensioning. Osgood, Torgerson, and Shepard all propose some variation on dimensional scaling techniques. The flexible measurement system offered by multidimensional scales seems particularly appropriate when dealing with stimuli like words, illustrations, or other abstract concepts. Attempts to predict and explain complex socio-psychological phenomena where stimuli often have many intangible dimensions has created a need for such measurement techniques. Technical communication, which deals with a very specific audience (one is tempted to say social group), can benefit from the application of these measures in two ways. First, the measures, operating through a system of paired coordinate judgements, can be used to identify writing and/or professional conceptions that inform the writer's work. That is, through an interviewing technique, which bears striking similarities to Lloyd-Jones' efforts, the researcher can develop a vocabulary of important issues that the writer uses in both his/her writing and which also forms the basis for judgements about audience. These concepts are then paired and the writer is asked to determine the distance between the entire issue spectrum. What emerges is a pictogram, via computational manipulation, that defines the relationship between a variety of issues. For instance, in a pilot project performed by the GODI Group at Rensselaer Polytechnic Institute (RPI), it was discovered that graduate students in technical writing (as well as participants from academia and industry in RPI's summer institutes) exhibited a great deal of tension about their relationship to humanistic and scientific elements in their education or work. That is, they understood the nature of their work but felt uncertain about its role in relation to technology. Since the study has often been replicated, it would appear that technical writers are not certain about their "supporting" role in relation to the ends of technological activity.

Similar studies can and have been done in the work environment. One such effort looked at writers' perceptions of audience and purpose and created a programmatic model for document preparation in that environment. The study, however, pushed the multi-dimensional scaling concept further than normal. As a corollary to the writer/editor analysis, the research group did a similar analysis of the potential (and in this case clearly defined) users of the document. Even before the work was produced, before anyone put word to paper, it was obvious that there was a lack of fit between writers' perception of audience and audience expectations. That clearly

defined gap in preliminary assessment became the basis for changes in text production. It also became the basis for a new editorial policy. The final part of this particular study involved follow-up observations of both populations, as well as a control group, to establish goodness of fit. The effort proved to be a phenomenal success.

Of course, this study was exhaustive and demanding on the part of the writing group. Not every company has such luxury. In defense of the expenditure of time and energy, it should be noted that subsequent studies of similar situations became much easier to accomplish (and just as productive). Once this kind of semantic mapping is established, then it can be applied in a variety of situations to determine the optimal strategies necessary to alter a particular set of relationships to achieve communication fit. This has been, admittedly, a very sketchy profile of a very complex system. Briefly summarized, the technique calls for interviews of both writer and audience to develop the concepts necessary for establishing a model of communication fit--audience perception in comparison to audience expectations, writers' methodologies in comparison to readers' habits. The output needs to approximate the decoder's capabilities. This method offers an intriguing model for coming closer to achieving such a purpose than simple platitudes about knowing your aidience; and it does so in a way that closely resembles the Lloyd-Jones model, a model that is generally considered extremely effective for assessing written material.

In addition, this dimensional technique admits of comparison with the work of William Perry and Lawrence Kohlberg in ethical development. Both of these figures, working within the framework of dimensional scaling, have created matrices that allow one to use comparative scales to make evaluations of moral and ethical development. Since their system is indeed general, we can apply the technique in a variety of areas. According to their schema, it is possible to make judgements about the underlying nature of the communication task by assessing the evident purpose of the finished document. For instance, language used solely as a tool of production (the process orientation decried earlier in this paper) is seen as a sign or symptom of very rudimentary language use. Language in this sense, lacks development and engagement; it is Kinneavy's transparent text. At the opposite extreme, the other half of the pair, is language used as an analytical tool. In terms of language, words on a page, it is symptomatic of an attempt to understand the reality under consideration--a conscious tool. It is also a sign that language is viewed by both writer and reader, in this context, as a medium for personal growth. To go back to the lowest level for a moment. Language is seen in its simplistic form; it is transparent; it describes situations that are clear cut dualities: good and bad, white and black. Theses situations are textually closed; interpretation is both unnecessary and impossible. It is also a communication situation that rarely exists beyond imperatives. At the other end of the spectrum, we find opaque texts that call attention to themselves as artifacts, art objects, objects of delight. Such texts are open in the most general sense; they invite interpretation and possess substantial and irrefutable ambiguities.

This sense of opposition, I think, is a fundamental premise that underlies much of our thinking about the role of technical writing and the dilemma of humanistically trained writers in a technological profession. In support of engineering's role as producer of artifacts, technical writing has inherited some of the tensions, anomalies, and problems of that role. Engineering, for instance, adheres to the doctrine of objectivity which has generated a variety of writing problems that define the limits of the writer's role--personality, the presence of the author, and a discernible "voice"; objectivity, fair treatment of facts and phenomenon; and linguistic manipulation, using language as a tool to create illusion. For the sake of brevity, I would like to take only one of these issues under consideration in this paper--personality.

Personality, it seems to me, implies the presence of the writer as an identity in a work while objectivity rests on an attitude toward material. One can use the phrase, "I found that the sample weighed 128 grams," without destroying the factual nature of the observed measurement. Such a statement not only identifies the author, it places responsibility and, I suspect, is exactly what makes engineers and others apprehensive about using first person pronouns.

In effect, technical writing maintains two unwritten but implied rules about personality: it is permissible and even desirable to ignore the author's identity, voice, or stance; and the best method for communication is to devalue the individual--as both writer and reader. The consequences of such a position has implications both for communication and ethics. To examine this problem we need to examine the role of the individual in a technological society, the methods writers use to communicate in such a society, and the relation of the reader to technical material.

I would like to suggest that we view the individual in a technological society in Anatol Rapoport's terms of instrumental or intrinsic value. The former simply means that an idea, object, or device has value because it enhances something else that we value; the latter--intrinsic--means being comfortable and alive. One can obviously guess that Rapoport sees the instrumental value as inconsistent with humanistic and ethical concerns: if individuals have only instrumental value to technology, as consumers then they have no value. Lee Thayer offers a similar distinction, which neatly applies Rapoport's terms to our needs, when he discusses the ethical role of communication. For Thayer communication has two possible roles: socialization and individuation. Communication in the former sense relies on people expressing and understanding themselves in the "proper" manner without regard to fact; social "fit" is paramount, nothing else matters. (This sense, for example, typifies scientific agreement about a particular phenomenon.) In contrast, individuation in communication is characterized by language behaviors which see value (intrinsic value) in the individual. Technology, in either view, must be the receptacle of instrumental value, man of intrinsic. Once one agrees to such statements, ethics assume a much more dominant role in technological affairs, including communication.

Along with this revaluation of the individual must also come a reconsideration of the author and reader in relation to technical information.

Herbert Simon, for instance, posits an intriguing definition of a goal-seeking system (of which man is an example) that seems to me particularly appropriate to examining this relationship. Such a system, Simon maintains, has two channels (the old inner and outer environment in some ways): the afferent (sensory channels) which receive information and the efferent (motor channels) through which the environment is manipulated. Interestingly, Simon's observations parallel the work of Louise Rosenblatt who uses the term efferent in her theoretical discussions to describe the concepts to be retained after reading. While this use at first appears to be somewhat at odds with Simon's use of the term, I want to suggest that his efferent channel depicts ways of using the concepts retained by the afferent channel and, as such, both terms describe the same phenomenon as Rosenblatt's term. Rosenblatt, in fact, says that readers direct their response to referential prose outward [afferently in Simon's terms] toward concepts to be retained or actions which are textually determined.

An additional aspect of personality that must be dealt with concerns what Rosenblatt calls "selective attention." In selective attention, Rosenblatt claims that a reader adopts a focus of attention, a stance, and then selects responses relevant to the text based on that stance. She adds that this continuing process bestows interest on particular thoughts which then seem independent of consciousness; at this point the selective process sets the degree of awareness by weighting the potentiality of the text for both efferent and experiential import. The reader has the primary responsibility to manage this weighting process which, in actuality, is based on textual potential for engaging the reader in multiple, selective activities.

This sense of selectivity is at one with the concepts I discussed earlier. Selective behaviors, behaviors which define the ways in which information is actually processed, have the potential to define both the reader's and the writer's relationship to communication tasks. One does not, of course, see communication tasks as simple polarities; it is, however, possible to use this sense of polarity for good ends. One can take such paired opposites, add the element of personal interviews, multi-dimensional scaling, and ethical considerations to provide editors with a fairly descent and replicable definition of both the necessities of the writing task and the demands and expectations of the potential reader. One can also make judgements about the commitment and allegiances of both writer and audience, and, I think, place the field of technical communication squarely into a domain that has carefully defined characteristics regardless of regional aberrations. Unlike other, more subjective systems, this combination of techniques, all of which have a long history of demonstrable accuracy, has the potential for defining the field of technical communication with precision and humanity.

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